

## MECHANICAL INVENTIONS.

Mr. Auguste Jacques Hurtu, of Paris, France, has patented improvements in the class of sewing machines employing a circular stationary bobbin and a rotary hook. The shaft carrying the hook is made in two parts, connected by gearing so constructed that while the main shaft receives continuous uniform rotary motion, the other part which carries the hook receives, during part of each revolution, a faster or slower motion than the first, in order that the needle thread shall be thrown rapidly off the shuttle. The bobbin case is held in place and released at will, and the plate to which the devices for holding the shuttle are attached is also easily removed and replaced.

New and useful improvements in car frames have been patented by Messrs. Thornton A. Brant and Calvin D. Harris, of Mattoon, Ill. The end sills, side sills, and stringers of a railroad car frame are connected by angle irons, so that the sills and stringers can be readily detached and replaced when desired without disturbing the car floor. As no mortises or tenons are required in making the frame, lighter timbers can be used than when the frames are constructed in the usual manner.

An improved expansion joint for metal tubing has been patented by Mr. John J. Moss, of Chicago, Ill. A tube whose diameter is slightly greater than the tubes to be joined has its middle portion formed into a spiral by cutting a helical V-shaped groove entirely through its walls. This part of the tube forms the joint proper. A case and proper devices for tightening and loosening the joint are provided. The ends of the pipes to be joined are passed into the joint, and the devices tightened, the pipes being held tight enough to prevent their contents from escaping, and loose enough to permit the pipes to expand and contract from changes of temperature.

Messrs. John Creagan and Charles D. Tyler, Jr., of Cleveland, O., have patented a machine to facilitate the setting of springs. To the end bars of its frame two rods are attached that serve as guides for sliding plates that move on the rods. On the surface of these plates is a series of movable transverse bars, placed in such a position that the form of the space between their adjacent ends shall be of the desired shape of the spring. These bars are rigidly held in place by suitable devices. One of the sliding plates is moved back and forth by a screw, and when the spring to be set is placed in the space between the transverse bars the screw is revolved, and the plates close together, setting the spring as desired.

An improved carriage brake has recently been patented by Mr. Walter R. Mortimer, of Rogate Lodge, Eng. In constructing the brake, a sleeve that projects toward the carriage is attached to the rear end of the hub, and beyond the sleeve, on the axle, is a disk provided with a projection extending beyond the sleeve. Inside of the sleeve on the wheel a divided spring ring is placed, that is covered on its outer surface with leather, and is of such a size that the wheel can revolve without friction. The sleeve is connected to a lever secured to the projection of the disk, in such a manner that when the lever is moved the spring is pressed out against the sleeve, acting as a brake to the wheel.

An improved tool for setting or extracting jewels in watches has been patented by Mr. William B. Atkinson, of Franklin, Ky. The bed plate of the tool has the usual slots and clamps by which the plate to be jeweled is held in position, and is secured to the lower arm of a bracket, the upper arm of which is perforated vertically for holding a cranked drill rod, in the lower end of which the jewel is secured. The watch plate is centered on the bed plate at the point to be jeweled, and by the use of properly shaped tools inserted in the lower end of the drill rod, the hole is prepared for the insertion of the jewel.

An improved jointer in which a number of shingles may be jointed at a time has been patented by Mr. Robert Holbon, of Alpena, Mich. The machine is provided with a number of saws secured at different distances apart upon a mandrel by means of collars and set screws. The edges of the saws project a little distance above a table, and roughened feed rollers that revolve near the table carry the shingles to be jointed past the saws. As the shingles leave the machine they are struck by the ends of revolving arms and separated from the refuse of the machine.

An invention for governing the motion of mechanism, in which a train of wheels is driven by a weight, has been patented by Mr. Thomas R. Gibson, of Fremont, Neb. Upon a suitable frame, a train of gear wheels is placed, and to the shaft of the primary wheel is connected a rope that passes over a pulley and carries a weight. A centrifugal governor is connected to a lever, placed above a brake wheel on one of the shafts of the train, so as to bear on the rim of the wheel when brought down by the rise of the governor balls. The governor is operated by a belt connected to a pulley on the power shaft at the end of the train.

An improved machine for boring the fellys of wagons has been patented by Mr. Vincent Cox, of New Vienna, O. The frame of the machine consists of a base upon which the felly rests, having an open guard on its front against which the front of the felly bears. A horizontal bar projects from the front of the base, that has at its outer end an eye, in which a vertical post is adjustably secured, forming a bearing post for the shaft of the auger, the shaft fitting loosely in the post. With this construction a straight hole may be bored through the felly without gauging or marking.

## ELECTRICAL INVENTIONS.

Mr. Louis H. Spellier, of Doylestown, Pa., has patented an electric motor for clocks. The motor consists of a wheel or disk with a series of armatures, and a corresponding series of inclined teeth combined with an electro-magnet which acts upon the armature, and with a weighted lever with bearing roller resting upon the inclined teeth, the parts being arranged to produce a progressive intermittent feed movement of the wheel in one direction, one movement being effected by the magnets in attracting the armature, and then, when the current is broken, the weight-bearing

roller, acting upon an inclined tooth of the wheel, causes the wheel to move farther in the same direction, bringing another armature within the range of attraction of the magnet.

An automatic circuit closing device, applied to a telegraph key of ordinary construction, has been patented by Mr. John A. Timmerman, of Oaessa, Can. The closing device consists of an auxiliary lever hung at one side, and on one of the pivots of the lever of the key, its forward end, extending upward through the key button and above the button, is provided with a disk. At its rear end the lever is attached to a spring that draws it and raises the disk above the key button, and it also closes the circuit. When the telegraph key is used the disk is held to the top of the key button, opening the circuit by the action of the auxiliary lever, but when the key and disk is released, the spring closes the circuit automatically.

Mr. William S. Parker, of New York city, has patented a dynamo-electric machine in which the heating produced by induced magnetism in the bars of the armatures is greatly reduced. The armature consists of a shaft to which are attached circular heads, and to the edges of the heads at equal distances are secured bars of soft iron provided at each side with flanges, the flanges forming the poles of the armature magnets. The armature bars are wound lengthwise, and the wire is retained by the flanges. Spaces are left in the flanges at suitable intervals for the air to circulate freely, and the spaces also serve to prevent the circulation of currents. The pole blocks of the machine are cast and fitted on their faces with bars of soft iron, the soft iron being more easily magnetized, and inducing a more powerful action in the machine.

Mr. Robert J. Pratt, of Troy, N. Y., has recently patented improvements in electric arc lamps, by which the carbons of the lamp are automatically regulated and held a constant distance from each other. Clamping devices operated by an electro-magnet hold the upper carbon until its lower end is so far burned away that the current is weakened and the carbon drops into or nearly into contact with the lower carbon. The lower carbon is balanced between the tension of a spring which carries it up, and an electro-magnet that pulls it down. If the upper carbon drops too close to the lower one, the increased strength of the current causes the electro-magnet to bring down the lower carbon to the proper distance from the upper one.

## AGRICULTURAL INVENTIONS.

Mr. Adolphus F. Gibboney, of Belleville, Pa., has patented improvements in "force feed" seeding machines. The frame and hopper of the machine are of the usual construction, and a seed cup is secured to the lower face of the frame under the lower end of the hopper. A feed wheel that is corrugated on its surface is revolved in the seed cup, by a sleeve that has corrugations on its inner surface to correspond with the corrugations of the feed wheel. The sleeve is slid by means of a lever upon the surface of the feed wheel to form a cut-off, for increasing or diminishing the quantity of grain sown. The lower edge of the opening in the seed cup is oblique to the corrugations in the feed wheel, this form of opening distributing the grain more evenly.

Mr. Thomas Bower, of Waterburg, N. Y., has patented improvements in tree protectors. The protector consists of a series of upright slats, that are spaced to admit light and air, and held together by elastic bands. These slats encircle the tree for a limited distance from the ground, and terminate at their ends in outwardly bent barbed extensions, and may be made wholly of iron or steel, or partly of wood, and the bent portions of metal.

Improvements in hay and cotton presses invented by David P. Burkett, deceased, have been patented by K. M. Burkett, administratrix. The press box is provided with two followers, each operated by separate and independent mechanisms. When the box is filled one of the followers is driven forward by a hand wheel to its full movement. Power is then applied by levers to the opposite follower, thoroughly pressing the bale. The doors of the box are then opened, and the bale removed.

A device by which trash is removed from in front of the hoes of grain drills, without stopping the drill or raising the hoes from the ground, has been patented by Mr. Slaughter G. Major, of Haynesville, Mo. A gear wheel formed of three segments is attached to the axle of the drill, and each segment has four teeth that mesh into a four-toothed segment attached to a shaft, from which arms hang the sides of the drill hoes. When the axle is revolved, the segments engage and move the shaft forward, giving a forward movement to lower ends of the arms, and clearing off the trash accumulated in front of the hoes. A spring throws the shaft back when the segments disengage.

Mr. John Quin, of Wakeman, O., has recently patented improvements in constructing mould boards of plows, that consist in the peculiar formation of the exterior concave surface of the mould board, and also in the method of laying out and constructing the mould boards, so that they shall be adapted to do their work in the best manner possible, and with the least amount of draught.

## MISCELLANEOUS INVENTIONS.

A portable head rest to be used in all kinds of public conveyances has been patented by Mr. William H. Woolridge, of Louisville, Ky. At the upper end of a standard is pivoted an annular wire frame suitable for supporting a pad or cushion. The standard has a central longitudinal slot, in which a thumb screw is inserted, and on its rear side is placed a slotted bar, through which the thumb screw passes and secures it to the standard. Below the slot the bar is curved and serves as a clamp to hold the head rest to the back of the seat. The standard and bar both being slotted allows the device to be made much shorter, and it may be used either upon the end of a seat for lying down or upon the back as a head rest.

An improved earth closet has been patented recently by Mr. Henry J. Behrens, of New York city.

The seat is attached to the inner side of the wall of the closet, and above the seat on the outer surface of the wall is attached a hopper, having in its upper part a sliding sieve, that has a handle for reciprocating it. The bottom of this hopper is closed by a slot fastened on the top of a hopper that is hinged to the bottom of the seat, and supported by a weight in a vertical position under the upper hopper. A rod attached to the hopper for moving it projects from the seat. By suitably arranged devices, ashes placed in the upper receptacle are let down in small quantities to the swinging hopper, and when the rod is pulled the hopper is inverted and the ashes fall to cover the excrements in the pit under the seat.

Mr. Alexander L. Griffith, of Beallsville, O., has patented improvements in triangular road scrapers, by which they may be easily moved from place to place, and by which the depth of the cut may be regulated. Near each end of the land side of the scraper are pivoted small wheels that serve as transportation wheels and also hold the scraper against lateral pressure. At the rear end of the mould board plank of the scraper is placed a wheel that is adjusted up and down by means of a lever secured to the mould board by a pivot. By operating the lever the lower edge of the board may be given any desired upward inclination toward its rear end, so as to round up or raise the middle part of the roadway.

Mr. Robert W. Chambers, of Sidney, O., has patented improved devices for loading and unloading sulky earth scrapers. The scraper is of the usual form and has small wheels near its rear end, and has its end gate hinged near its upper edge, so as to swing out when the forward end of the scraper is elevated. For holding the end gate when loading the scraper, pins pass through recesses at the rear edge of the scraper bottom. The pins are secured to a shaft underneath the bottom, and moved up and down by means of a hand lever, which when the pins are up is retained by a keeper. The scraper is drawn by bars pivoted to its front and to the tongue, and the front end is raised for dumping the earth by means of chains attached to sheaves on the axle, the axle being revolved for winding the chains by being geared to one of the wheels by a sliding clutch.

Mr. Max Hallheimer, of Brooklyn, N. Y., has recently patented a combined folding bedstead and closet. The closet is placed upon a base that forms a receptacle for the pillows and bed clothes. The side rails of the bed are hinged to the top of the base, and have an inwardly projecting flange at the bottom, and are connected at their free ends by a foot board to which they are hinged. When the bed is folded, the rails rest against the sides of the closet, and the flanges against the front, the legs of the foot boards resting against the under surface of the flanges of the side rails, and projecting from the top of the closet. The foot board is ornamented and forms an ornamental top for the closet. The closet is divided by a partition into a front and rear compartment, and the front is provided with doors. The mattress has slats across it to form the bottom of the bed, and suitable devices are provided for raising and lowering.

Mr. George W. Dudley, of Waynesborough, Va., has patented an improvement in reamers. The reamer is first made in the shape of a square in cross section and having the proper amount of taper, and grooves are then cut on one side of each of its corners, and the whole piece is then twisted to form a spiral cutting edge. In giving the twist the reamer is turned upon its longitudinal axis, so that its spirals wind in a reverse direction to the ordinary gimlet. This reamer cuts at all points in its circumference at the same time and makes a perfectly round hole, and will not choke, as it drives the cuttings before it.

A new mechanical musical instrument has been patented by Mr. George W. Van Dusen, of Brooklyn, N. Y. In the top of the air chamber of the instrument are two openings that lead into air passages that are closed alternately by a double valve. Openings in the air passages lead to two bellows that are connected by a rod, so that one will open and close when the other closes and opens. Reeds and reed valves are operated by perforated sheet music and by the air pressure. By this construction of the bellows and valves they are nearly balanced and their movements are prompt, and the music will be given with animation.

A novel device for holding the rolled curtains of carriages has been patented by Mr. William H. Weaver, of Emmetsburg, Md. A circular curved spring hook is swiveled upon the top rail of a carriage top, so that it can be turned to project from the rail when the curtain is raised, or be placed parallel with it when the curtain is lowered. If the curtain is to be raised it is rolled up in the usual manner, and the rolled curtain is held above the hooks, the free end of which is pulled outward to admit the curtain. When the hook is released its spring closes it, holding the curtain firmly.

A machine for making ditches for drain pipes has been patented by Mr. Francis Piageon, of Saugerties, N. Y. A platform supported on broad wheels carries at one end a device for raising and dropping a wide, heavy knife, in the same manner as the ramming block of a pile driver is raised and dropped. The knife cuts a narrow tapering trench, and the earth is not scooped out, but pressed to the sides. When a portion of the ditch equal to the width of the knife is completed, by suitably arranged devices the platform is moved in the line of the trench a distance equal to the width of the knife.

An improved glove and mitten fastening has been patented by Mr. William Gifford, of Schenectady, N. Y. Strips of metal are punched out in such shape that they may be hinged at one end, and their sides bent over to take hold upon, and cover the edges of the slit or opening at the wrist. A projection from the side of one of the strips has an aperture at its outer end, that is adapted to be hooked over a rivet attached to the opposite side, thus locking the device and fastening the glove. The fastening is strong, and protects the edges of the slit from being ripped when the glove is drawn on.

A saddle pad that can be attached to and detached from the saddle, and is not destroyed by the perspiration of the animal, has been patented by Francis A. Hake, of Cuero, Tex. The pad is formed of an upper and lower cover, made of waterproof material, and fitted between with layers of felt or woolen cloth, cut in the desired shape of the pad. The upper and lower covers are connected by lacing. The pads of each have pockets adapted to receive the front and rear projecting parts of the saddle tree side bars, and laces attached to the pads serve to secure them to the saddle tree.

An invention to prevent the escape of grounds when pouring coffee from coffee pots has been patented by Mr. John McAnespey, of Philadelphia, Pa. In the inside of the coffee pot is an upright, finely perforated in its upper part, and secured to the sides of the pot in such a position as to cover the hole leading to the spout. When the pot is inclined to pour out coffee the grounds are kept back, by the solid lower part of the plate, while the coffee passes through the perforations of the plate and out at the spout, free from grounds.

Mr. William E. Harris, of New York city, has patented improvements in the process of extracting gold from ores. The ore, after being roasted and chloridized, is then placed in amalgamating pans, and mixed with bromide of sodium in the proportion of two pounds of bromide to a ton of ore. Water and quicksilver are then added, to produce a proper amalgamation of the metal, and the amalgamator is run about three hours, and the pulp is discharged through separators. The bromide of sodium prevents the sulphates and chlorides from attacking the quicksilver.

Mr. William R. Fleming, of Newark, N. J., has patented improvements in "German student" lamps by which the movable reservoir of the lamp is dispensed with. The lamp is of the ordinary construction, except that the filling cup is left out, and the top of the reservoir is provided with an air-tight plug, and a stop-cock is placed in the tube that connects the reservoir and the lamp. The stop-cock is turned to close the tube when the lamp is filled. When the tube is opened the oil fills the burner to the top of the connecting tube, and as it is burned away below the edge of the tube, the vacuum in the oil reservoir causes a bubble of air to pass up the tube, and oil is let down again.

Mr. Monroe Ingraham, of Dadeville, Mo., has patented a reel for bolting purposes, in which the bars of the reel, instead of being supported by spokes from the shaft in the usual manner, are attached to heads, on which are flanged rims that roll on friction wheels for support, and are also driven by them. The interior space of a reel is free, and fans are fastened to the shaft, that are revolved in opposite direction to the reel for urging the meal from the center, to and through the bolting cloth, by gentle currents of air. By this construction the capacity of the bolt is largely increased.

An invention to facilitate the reversing of windows for cleaning them from the inside has been patented by Mr. Henry Becker, of New York city. The upper half of the window jams are adapted to swing on pivots, and the lower sash is raised until it is within the swinging frame and is locked in this position. Both sashes are then inverted by turning the swinging frame half way over. By this means the outside of the sashes are turned to the inside and they may be cleaned by a person inside the room, avoiding the danger from cleaning from the outside.

Mr. Alonzo Chappel, of Brooklyn, N. Y., has patented a combination easel, consisting of the easel, drawing board, portfolio, and drawers. The easel is hinged upon one edge of a shallow box and forms the cover of the box. This box forms the upper cross-piece of the easel frame, and under the box is a drawer divided into compartments for brushes and paints, and between the drawer and the lower cross-piece of the frame is a portfolio. Suitable devices for retaining the easel in position when raised are provided. The easel, when nicely constructed and finished, makes a nice piece of furniture for a drawing-room.

An apparatus in which the amalgamating of gold or silver ores is very easily effected has been patented by Mr. Walter Hamilton, of New York city. A basin of sufficient size to contain a large amount of melted lead, or metals capable of amalgamating gold or silver ores, is placed over the fire chamber of a furnace. At a suitable distance above this basin and furnace a similar basin and furnace is placed, and from an aperture in the upper basin a vertical pipe leans down to near the bottom of the lower basin. A funnel, suspended in the upper basin, discharges into the vertical pipe. From the hopper the pulverized ore is forced by feed screws into the funnel, and from the funnel into the lower basin. As the ore passes from the funnel it is mixed with the melted metal in the vertical pipe, and as it passes out at the end of the pipe a series of devices moves the ore about until every particle of the gold or silver comes in contact with the lead and is removed.

Mr. Gordon Dinsmoor, of Kirksville, Mo., has recently patented improvements in school desks. The improvement consists of a foot rest sliding in grooves in the desk frame, and connected with the front edge of the hinged seat, whereby the hinged seat and the foot rest are simultaneously raised and lowered. By this construction a foot rest is provided that cannot be removed by the janitor, and when the seat is raised is out of the way of the broom in sweeping.

## ENGINEERING INVENTION.

An apparatus for removing sand bars from rivers and harbors has been patented by Mr. John H. Huffner, of Jacksonville, Ore. A stout flat-bottomed boat is provided for carrying the machinery, the boat being propelled by a stern wheel driven by an engine, and also has a hydraulic pump worked by the engine. A hydraulic tube, into which water is forced by the pump, is fitted to the bow of the boat, and reaches to the bottom of the river, and the sand or mud is removed by projecting a jet or number of jets of water against it.